Indicator #19
Operations and Algebraic Thinking

Student understands addition as putting together and adding to, and understands subtraction as taking apart and taking from.

Research

At this stage children can answer the question "How many?" According to the National Association for the Education of Young Children teachers can use examples that arise during child-directed activities to help reinforce addition and subtracting throughout a student's normal day. These are used as opportunities to teach counting skills without actively creating lesson plans. Children can visualize this concept much easier when manipulatives are involved. Using manipulatives is the strongest strategy used to help students begin adding and subtracting numbers. Activities that support algebraic thinking in kindergarten help promote high-quality, challenging mathematics education. This establishes the necessary groundwork for ongoing and future mathematics learning. To open future gates and remove potential barriers we must incorporate more algebraic thinking experiences that are of high quality so that children are prepared for the learning that will take place in the future.

Sadler, F. H. (2009, October). Help! They Still Don't Understand Counting. *TEACHING Exceptional Children Plus, 6*(1). Retrieved June 03, 2016, from http://files.eric.ed.gov/fulltext/EJ875422.pdf

Operations and Algebraic Thinking
2.2 .PK.A.1

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

The learner will:

- Combine or separate up to six objects and identify the number of objects remaining

The learner may also:

- Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g. claps), acting out situations, verbal explanations, expressions, or equations
- Explain adding and subtracting sets of objects up to and including six, using basic math vocabulary (e.g. putting together, adding to, taking away, taking apart, taking from)
- Join sets of objects
- Separate sets of objects
- Add objects to a set and tell a number story about it

Effective Practices:

- Model using appropriate math vocabulary when adding objects to a set
- Model using appropriate math vocabulary when taking away from a set
- Use manipulatives to demonstrate joining and separating sets
- Tell stories about joining and separating sets

ACTIVITIES

Activity :

Materials

Counting Bears

Provide each student with 10 bears. Students will be adding and subtracting bears; putting together and taking apart a whole.

Activity Prompts:

Activity best done in small groups. The teacher will ask the students, "Put your bears into two groups. How many do you

have in each group, and how many do you have altogether?" The teacher will ask the students, "Take one bear away and how many do you have left in your group?"

Extension:
Ask students to tell the math expression that matches the bear groups as the teacher gives the prompts. (Ex. 3 + 3 = 6)

Evidence Collection Strategies:
- Teachers will observe and document students' ability to combine and separate groups of objects correctly identifying how many.

Home School Connection:
While setting the table, the parent will put out plates, and have the child tell how many more we need.
How many people are in your family (adults + children, boys + girls, etc?)

Activity:
Materials
Chart paper/chalk board/ white board
Writing utensils

1. Question of the Day
   - Survey question is posted daily (e.g. "How many students packed their lunch today?", "How many students have sneakers on?")
   - Students tally their answers on the chart.
   - Create an addition or subtraction sentence using the results of the question. (e.g. 20 – 10 = 10; 20 students in our class – 10 with sneakers = 10 without sneakers)
2. Develop number sentences around the number of children present and absent for the day.

Activity Prompts:
Use the correct math terminology to prompt a response when students are not sure. "How many in all? How many are left? Take away; take apart, or taking from."

Evidence Collection Strategies:
- Teachers observe and documents students' ability to comprehend the combining and separating of groups.

Home School Connection:
- Encourage families to engage their child in activities that require counting, adding, and subtracting.
- While driving, count cars on the road. Add number of blue cars plus number of red cars.
- Count and add simple items around the house.